ADDENDUM 2. PUBLIC COMMENTS ON Site Specific Environmental Assessment Rangeland Grasshopper Suppression Program Southwest Idaho EA Number ID-06-02 and APHIS Response..

ONE PUBLIC COMMENT WAS RECEIVED AND IT FOLLOWS IN ITS ENTIRIETY:

March 31, 2006

Dave McNeal
State Plant Health Director
UDSA APHIS PPQ
9134 W Blackeagle Dr.
Boise, ID 83709

RE: Xerces Society for Invertebrate Conservation and Idaho Conservation League comments on APHIS's Site Specific Environmental Assessment – Rangeland Grasshopper Suppression Program, 2006.

EA Numbers: ID-06-02; ID-06-03; ID-06-04.

Thank you for allowing us to provide comments on this important issue.

The Xerces Society for Invertebrate Conservation has worked on issues related to biological diversity of western public lands for over 30 years. We have members in Idaho and throughout the U.S. that utilize Idaho's public lands for recreational and scientific purposes.

The Idaho Conservation League has a long history of involvement with rangeland, species management and public health issues. As Idaho's largest conservation organization we represent members who live, work and recreate within the area affected by this program and who are very interested in this project.

As you know, our organizations have been concerned that previous APHIS programs were not fully protective of water quality, wildlife and human health. Indeed, in past years our concerns culminated in litigation.

We have reviewed APHIS's 2006 Environmental Assessment for its Idaho Grasshopper program. It is our belief that the 2006 program is an improvement over some past APHIS proposals. The use of a Modified Reduced Area Treatment as the preferred alternative is a positive step. The elimination of carbaryl spray as part of this alternative is also extremely positive. However, there are many aspects that cause us concern. We hope that our concerns can be addressed by APHIS as you develop your final plan of action for the 2006 season. We appreciate your ongoing efforts to develop a program that meets the needs of your agency and addresses our concerns.

Summary of Concerns:
In comparing certain western States counties with different histories of insecticide use, Lockwood et al. (1988) concluded that suppression of native biological control agents by large scale long term insecticide use leads to increased frequency and severity of grasshopper outbreaks. Because of this we believe that pesticides should only be used as a last resort.

The USDA APHIS's Idaho Grasshopper Suppression Program Proposed Action 2006 could authorize aerial spraying of the insecticides (Dimilin and malathion) and the use of carbaryl in spring/summer 2006. Although we are not opposed to all pesticide use, the Xerces Society opposes the use of all malathion and liquid carbaryl use for the control of native insects on grasslands across Idaho.

We believe that to protect vital resources, APHIS should:
1) use only Dimilin or carbaryl granular formulation;
2) increase the size of buffers to protect water bodies. Larger buffers are needed around all water sources, including intermittent and ephemeral streams, wetlands and streams and rivers, as well as threatened and endangered species habitat, honey bee hives, and any human inhabited area;
3) complete a full cost benefit analysis to determine whether federal funds are being well spent.
4) complete more frequent and intense monitoring to identify populations that can be controlled when they are small with ground based pesticide application equipment.
5) monitor sites before and after spraying to determine if there is an impact on water quality or non-target species.

We are also concerned that there is misinformation in the EA that should be corrected.

I have attached our comments at the end of this letter. Please do not hesitate to contact me if you have any questions regarding our comments.

Sincerely,

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Ecologist/Entomologist
Executive Director
The Xerces Society for Invertebrate Conservation

Justin Hayes
Idaho Conservation League

Xerces Society for Invertebrate Conservation and Idaho Conservation League comments on APHIS's Site Specific Environmental Assessment – Rangeland Grasshopper Suppression Program, 2006.

EA Numbers: ID-06-02; ID-06-03; ID-06-04.

Pesticide Choice

If pesticides must be used to manage native grasshoppers and Mormon crickets we feel that diflubenzuron and carbaryl bait are the best options. Both carbaryl bait and diflubenzuron will result in; reduced mortality of non-target species, greater protection of pollinators and other beneficial insects and are the best option for protection of water quality.

The EA's preferred alternative lists three pesticides commonly used for grasshopper control: diflubenzuron (Dimilin), carbaryl (granular formulations), and malathion. All of these pesticides can be harmful to both terrestrial and aquatic organisms, but malathion provides the least protection for non-target species.

Malathion

Malathion is an organophosphate insecticide. It is one of a class of pesticides that are chemically related to nerve gases used in World War II. Like carbaryl, malathion attacks the nervous system by inhibiting AChE. Malathion can also inhibit liver enzymes that effect biological membrane function (Brenner 1992). Malathion has been associated with numerous health problems, including acute toxicity, subchronic and chronic toxicity, cancer, genetic defects, birth defects, reproductive problems, immune system suppression, and vision impairment (Brenner 1992).
Malathion is highly toxic to snails, worms, microcrustaceans, and aquatic insects.

Due to the non-target impacts malathion should not be used for the control of these native insects.

Carbaryl Bait

Carbaryl, even in bait form, is still a very toxic substance that can have significant, negative impacts to water quality and aquatic life.

Carbaryl in bait form may stay active for extended periods of time before breaking down into less toxic components. If bait is leached into aquatic ecosystems it may have a severe adverse impact on individual organisms and the entire ecosystem. Direct contact with aquatic macroinvertebrates may cause immediate mortality and sub-lethal doses may cause the loss of ability to gather food or to bear young successfully. Aquatic macroinvertebrates are highly important components of aquatic ecosystems. Most fish species use aquatic macroinvertebrates as their primary food source.

Wetland invertebrates serve as a major food source of migratory birds as well as resident animals such as amphibians. The small amounts of insecticide that reach aquatic ecosystems can have an adverse impact on aquatic invertebrates and other aquatic animals.

Since wheat bran has nutritional value and is consumed by small mammals (Barrett 1998), carbaryl-treated baits may represent an important risk factor for these animals. Punzo (2003) reported reduced running speed and increased cannibalism levels of young in rodents that feed on 2% carbaryl bait. Additionally the use of insecticide containing baits may increase mortality and reduce population densities in small mammals and that this might limit food for predators (Punzo 2003). Hoy and Shea (1981) reported depression in numbers of certain soil arthropod taxa up to 138 days after carbaryl treatment. Even carbaryl bait has been shown to have an impact on soil fauna (Schulze et al. 2003). The data presented in Schulze et al. (2003) suggest that even low dosage applications of carbaryl bait can have significant adverse effects on non-target arthropods.

Diflubenzuron

Dimilin is the trade name for the pesticide diflubenzuron. Dimilin acts as an insect growth inhibitor by arresting chitin synthesis, i.e., the formation of an insect's exoskeleton. There is ample evidence that Dimilin can cause adverse acute and chronic effects, (is very highly toxic), to freshwater invertebrates, including crustaceans, mollusks, and insects (Hanson and Gartum 1981, Hurd et al. 1996, , McCasland et al. 1998, O'Halloran 1994, McKague and Pridmore 1978, Martinat et al. 1987, Sundaram et al 1990). Forest application of diflubenzuron can effect nontarget organisms in streams. In one study Dimilin was applied by helicopter to two watersheds in the Fernow Experimental Forest near Parsons, West Virginia. Taxa that had reduced mean densities in treatment watersheds included the stoneflies, *Leuctra* sp. and *Isoperla* sp., the mayfly, *Paraleptophlebia* sp., and the crane fly, *Hexatoma* sp (Hurd et al 1996). Sundaram et al. (1990) found significant mortality occurred in amphipoda and immature Corixidae 1 to 6 days after the ponds were treated with Dimilin.

Dimilin is also lethal to Lepidoptera caterpillars at extremely small quantities (Martinat 1987). Dimilin has been shown to last weeks on foliage. Dimilin caused 100% mortality of Douglas-fir tussock moth larvae up to seven weeks following application (Robertson and Boelter 1979). Another study found residue on foliage 21 days after application (Martinat 1987). Although Dimilin does not directly impact vertebrates its use has been shown to cause a dietary shift among songbirds. Bradley et al. (1993) found that after Dimilin spraying, Lepidoptera larvae were reduced at treated sites. In addition, two bird species displayed reduced total gut biomass at treated sites. These data show that while diflubenzuron is not directly toxic to vertebrates, birds are affected indirectly through reduced availability of Lepidoptera larvae (Bradley et al. 1993).

Although diflubenzuron can be expected to break down into less toxic components quicker than carbaryl in bait form, it still can have adverse ecological consequences. There are clearly times when the use of diflubenzuron would be preferred over carbaryl. However, this general preference for diflubenzuron is tempered by the greater likelihood that diflubenzuron, (since it is a liquid), will drift outside of the target area. In areas near water bodies, this could result in diflubenzuron contaminating waters of the United States, resulting in violations of the Clean Water Act and harming aquatic organisms.

Protecting Aquatic Systems

Spray drift into aquatic ecosystems may have a severe adverse impact on individual organisms and the entire ecosystem. Direct contact with aquatic macroinvertebrates may cause immediate mortality and sub-lethal doses may cause the loss of ability to gather food or to bear young successfully. Aquatic macroinvertebrates are highly important components of aquatic ecosystems. Most fish species use aquatic macroinvertebrates as their primary food source. Without a healthy aquatic macroinvertebrate community, the species, (fish and amphibians), that use them as food will not exist. Aquatic macroinvertebrates are sensitive to environmental change and because of this are used as indicators of aquatic ecosystem health.

Pesticide spray drift may have an especially severe impact on wetlands where there is not adequate flow to dilute the chemicals quickly. Wetland invertebrates serve as a major food source of migratory birds as well as resident animals such as amphibians.

The small amounts of insecticides that reach aquatic ecosystems can have an adverse impact on aquatic invertebrates and other aquatic animals. To protect aquatic life the recommended maximum concentration (RMC) for malathion in water is 0.1 parts per billion (PPB) and for carbaryl it is only 0.017 PPB. Studies have shown that trace amounts of pesticide can change behavior and cause macroinvertebrates to move away from the area, downstream. Non-lethal doses of insecticides can affect fitness, the ability of the invertebrates to bear young successfully. Research has also shown that trace amounts of malathion cause immune system problems in frogs. Animals that have weak immune systems are more susceptible to exposures of viruses and parasites.

Small amounts of malathion and carbaryl are routinely found in streams across the U.S. and Canada. The U.S. Geological Survey conducted surveys at 59 sites across the nation between 1992 and 1997. In surface water samples malathion was one of three organophosphate insecticides detected in the greatest percentage of samples and at the highest concentrations. A study in the Puget Sound area found that five pesticides including, carbaryl and malathion, exceeded concentration limits for the protection of aquatic life. The aquatic-life criteria indicate concentrations that can adversely affect aquatic organisms. Because of these findings both King County and Pierce County in Washington labeled malathion and carbaryl "Tier 1" pesticides. These pesticides are "considered highest concern and priority for phase-out" and are "the most hazardous products still in use or storage at either the City of Seattle shops or within King and Pierce county operations" because of potential impacts to aquatic life and salmon."

Toxicity to aquatic life is shown to be greater than additive when pesticides are mixed together in a water body. Studies have shown that the mixture of malathion and carbaryl is much more toxic than either one on their own. As noted above, pesticides are routinely found in streams throughout the U.S. Many streams and rivers in the west already have small concentrations of herbicides and insecticides and there is evidence that the risk to aquatic life will be further increased by adding small amounts of malathion and carbaryl to these areas.

In short, aquatic invertebrates are vitally important for food webs and the Idaho Grasshopper and Mormon Cricket Suppression Program may place these organisms at risk from pesticide poisoning.

Waters of the United States

We disagree with the narrow definition that APHIS has applied to water bodies. The EA defines water bodies as

> reservoirs, lakes, ponds left by seasonal streams, springs, wetlands, and perennial streams and rivers. EA Appendix 1.

This definition is counter to the judicial understanding of water bodies that constitute "waters of the United States" and are thus protected from contamination and pollution under the Clean Water Act. Courts have consistently held that intermittent streams, even when water is not present, constitute waters of the United States.

By failing to harmonize the APHIS definition of water bodies (which is used to govern the use of buffer strips), with the Clean Water Act definition of 'waters of the United States,' APHIS is virtually assuring that this program will result in violation of the Clean Water Act.

Buffer widths for aerial pesticide applications.

The EA proposes buffers for spray treatments to protect certain resources. The proposed buffer widths are as follows: 500 feet for water bodies with aerial liquid insecticides; 200-foot buffer with aerial bait; and 50-foot buffer with ground bait. These buffers are not adequate to ensure there are not adverse ecosystem impacts from pesticides drift and washing of granular insecticide into aquatic systems.

Drift is the movement of spray droplets or pesticide vapor out of the intended spray area. Whenever pesticides are applied by ground application or by air, the potential exists for off-target movement or drift. This can create risk for nearby people and wildlife, damage non-target crops, and pollute surface and ground water resources.

Several factors affect how much and where a pesticide will drift. The most important factors are droplet size and weather. Droplet size is important because smaller droplets remain suspended in the air much longer and can drift over longer distances than larger droplets. Wind speed and direction, relative humidity, air temperature, and atmospheric stability are weather factors that have an impact on spray drift. During windy conditions significant amounts of pesticide can drift outside the spray area. What many people do not realize is that small amounts of pesticide can also drift great distances under stable weather conditions. This long range drift is often related to the occurrence of a temperature inversion, an atmospheric phenomenon generally associated with stable weather conditions when wind is calm and skies are clear. In these conditions, the air near the surface is cooler than the air above it, resulting in small spray droplets being suspended for longer periods and consequently able to move laterally very long distances in very light wind.

There are numerous studies that have assessed the movement of pesticide out of the intended spray area. These studies show how much drift can move out of an area and begin to address the potential impact from drifting pesticides. The *Grasshopper Integrated Pest Management User Handbook* (APHIS Technical Bulletin No. 1809) notes:

"Results of monitoring showed that when the standard 500 ft (153m) no spray buffer was employed, trace amounts of pesticide was **always** detected in aquatic habitats." (Chapter III.6-2. Grasshopper Treatment Effects on Aquatic Communities, by D. W. Beyers and L. C. McEwen)-(Emphasis added)

Penn State (1993) found drift at great distances. In an assessment of drift of malathion resulting from use to control boll weevil, malathion concentrations were found up to one kilometer (5/8 mile)—the greatest distance measured—from the point of application. According to the study the highest amount of drift at one kilometer occurred when atmospheric conditions were stable, meaning vertical air mass movements were dampened.

There are many more studies that show pesticides can drift much farther. Two field studies summarized in the 1997 EPA registration Eligibility Decision for Diflubenzuron, (one of the chemicals that could be used in the spray area), found that it drifted at least 1,200 feet. In Butte County, California, MCPA, dimethyl amine spray drifted 400 meters (1,300 feet) and in Tulare County, California, carbaryl drifted 550 meters (1,787 feet) (Majewski and Capel 1995). A study of carbaryl applications in orchards in Vermont found that aerially applied carbaryl repeatedly drifted to the most distant sampling point (about 500 yards) under all wind and atmospheric stability conditions tested.

Drift studies show consistently that pesticide drift can be found one kilometer (5/8 mile) from the edge of the spray site and sometimes much farther. In Arkansas, drift of the herbicide propanil was concentrated enough at one kilometer to be injurious to crop plants (Barnes et al. 1987). Ghassemi et al (1982) analyzed six different field studies of insecticide drift using a curve fitting method to estimate the "worst case" and "best case" estimates of deposition over distances up to ten kilometers (6.21 miles). Even the best case scenario plotted drift over two kilometer (1.25 miles) and the worse case scenario found that 4.5% of the applied dose of pesticide would drift one kilometer (5/8 mile), 1.7% to two kilometers (1 1/4 miles), 0.38% to five kilometers (3.1 miles), and 0.1% to ten kilometers (6.21 miles). In one of the studies analyzed, carbaryl was found at over 1% of the applied dose greater than seven kilometers (4.3 miles) from the spray edge.

It is clear from the research summarized above and from numerous studies not mentioned that pesticide will drift great distances and cannot be adequately controlled under many weather conditions. Granular pesticides do not drift as far and are therefore preferable to sprays. That said, buffers for granular pesticides should be large as well to ensure that pesticide does not wash into water bodies.

There is significant documentation demonstrating that aerially applied liquid pesticides can reasonably be expected to drift more than 500 feet. Thus, it is a reasonable expectation that the proposed 500 foot buffers will not be protective of water quality and that drifting pesticides will result in violations of the Clean Water Act.

We urge APHIS to adopt 0.5 mile buffers for all water bodies with aerial liquid insecticides; 500-foot buffer with aerial bait; and 100-foot buffer with ground bait.

The buffers proposed by APHIS are inadequate to protect honey bee hives

Efforts to protect colonies of honey bees from pesticides need to address not only drift that may occur over apiaries, but also drift through, or direct application on, the area in which these colonies forage for nectar and pollen. It is well established that the majority of poisonings occur due to contact between the bee and contaminated foliage while the bees are out foraging and not while they are in the nest. Malathion residues on plants will remain toxic to honey bees for up to 5.5 days.

One study (Seeley, 1995) conducted in a natural area in upstate New York demonstrated that the average distance traveled by a colony's foragers was 1.32 miles (2.2 km) and that 95% of foraging trips occurred within a 3.6 mile (6 km) radius (see also Gould and Gould, 1988). This same study demonstrated that scouts regularly tracked floral resources 2.4 to 3.6 miles (4to 6 kilometers) from the hive (Winston, 1987). Studies in agricultural landscapes have produced somewhat different results. If copious nectar sources are available close to a hive, the bees may forage an average of only a few hundred meters from a hive (Visscher and Seeley, 1982). However, in more nectar-poor agricultural landscapes, honey bees may travel 2.2 miles (3.7 km) in search of nectar (Gary, Witherell, and Marston, 1972). If foraging conditions are particularly bad, bees have been induced to forage from feeding stations set up 6 miles (10 km) from a hive (Winston, 1987).

Using only Dimilin or carbaryl bait would also be a very positive step to protect these resources.

Impact of control on native bees and other importance invertebrates

Invertebrates eclipse all other forms of life on Earth, not only in sheer numbers, diversity, and biomass, but also in their importance to functioning ecosystems. The sheer number and mass of invertebrates reflects their enormous ecological impact. Admittedly, some have a negative impact on humans, either by harming us directly (as disease agents) or attacking food crops, tree plantations, and livestock. Even so, all adverse effects combined are insignificant compared to invertebrates' beneficial actions. Invertebrates are a part of nearly every food chain, either directly as food for other insects, fishes, amphibians, reptiles, birds, mammals, and other arthropods (Gilbert 1980), or indirectly as agents in the endless recycling of nutrients in the soil. Insects, worms, and mites are extremely important in helping microbes break down dung and dead plant and animal matter. Invertebrates are thought to decompose 99% of human and animal waste (Pimentel 1980). The perpetuation of food webs is often dependent on critical species performing essential services such as pollination or seed dispersal (Dodson 1975). There are dozens more examples of how invertebrates benefit ecosystems and humans as natural biological control, and as potential cures for human disease.

The pesticides that may be used in this project are not only lethal to Mormon crickets and grasshoppers, they are also lethal to most beneficial insects and other invertebrates. In areas that had been sprayed with malathion in California to eradicate the Mediterranean fruit fly there was a large increase in populations of whiteflies, aphids, mites, olive scale, black scale, brown soft scale, Florida red scale, and the gall midge. The increases of these insect populations were due to the effect of malathion on the parasitoids and other natural enemies of these pests. In many cases malathion has been found to be more toxic to the natural enemies than it is to the pest species themselves. The use of malathion to eradicate one pest may in turn upset the balance of many other natural host – parasitoid systems. Malathion can also impact soil organisms and impact decomposition.

Native bees are a group of beneficial insects that are often not considered in management decisions. Bees are considered the most important group of pollinators in temperate regions (Cane 2001). The importance of protecting the pollinators of rare plants during spraying programs is already recognized (Sipes and Tepedino 1995), but it is not just rare plants that require pollinators. If malathion and carbaryl spray are used in the control program proposed for grasshoppers, it could have a negative impact on the native bee fauna—and other pollinator insects—which in turn can affect the ability of many rangeland plants to reproduce.

There are two major reasons for native bees being affected. First, as with honey bees, exposure to insecticides while foraging can be more hazardous to bees than having the outside of the nest sprayed (Delaplane and Mayer 2000), as in essence most bee poisonings occur from contact between treated vegetation and the bee. Second, smaller bees are more susceptible to poisoning from pesticide residues (Johansen et al. 1983).

Native bees will be nesting in all suitable locations within the grasshopper control area. Approximately 70 percent of native bees nest in the ground, burrowing into areas of bare or partially vegetated soil (O'Toole and Raw 1999, Michener 2000). Most of the remaining 30 percent nest in abandoned beetle galleries in snags or soft-centered and hollow twigs and plant stems. Bumble bees nest in cavities in the ground or under grass tussocks. Unlike managed honey bee hives, it is not possible to protect the nest sites nor prevent native bees from leaving their nests for foraging during or immediately after spraying operations. Leaving a buffer zone around honey bee and leafcutter bee hives will not have any benefit for native bees, unless they happen to be nesting in the same area.

Using only Dimilin or carbaryl bait would be a very positive step to protect native bees and other beneficial insects.

No Action Alternative
As in the Idaho Grasshopper EA 2006 there are many statements in this section that would lead the reader to think that the No Action Alternative would have much greater negative impact than it really would. We do not believe that these statements are factually supported. Below we address just a few of these statements.

> A significant portion of the American public has a negative response to insects and some persons may be clinically diagnosed as Entomophobic.
>
> Persons that are entomophilic may have reduced levels of concern and increased enjoyment from experiencing outbreaks for recreational or scientific purposes.

As in the Mormon cricket EA this type of hyperbole should not be included in a federal document if you want to maintain credibility. Are there diagnosed entomophobs in the treatment area? Are you actually suggesting that treatment will help these people? Are you suggesting the entomophilic people will have increased enjoyment by outbreaks?

> Susceptibility to invasion by non-native plants is a consequence that would likely occur should the existing vegetation be removed by grasshopper.

Our research was not able to substantiate this claim. Indeed, we could not find a single study that supported this assumption. On the other hand there are numerous studies that have shown that cattle and roads are two major sources of noxious weeds. Equipment used for ground application of pesticides would also be a likely source.

> The damage caused by grasshoppers could pose a risk to rare, threatened or endangered plants

Rare and endangered plants often do have a low number of individuals and limited distribution. They are often threatened by cattle grazing, off road vehicle use, fire and many other natural and anthropogenic causes. Although grasshoppers pose a threat it is likely a small one in any given area. Indeed you say on the one hand that grasshoppers can harm these plants and on the other you maintain a three mile buffer around slickspot peppergrass (which we support) to protect the plant from the effect of the pesticide.

Cost Benefit Analysis
We believe the costs of this project may be more than the resource is worth. Even in agricultural areas with higher monetary value than open rangeland, control campaigns were sometimes conducted at an expense greater than the value of the crop (MacVean 1991). Even high densities of damaging species may not warrant treatment, if the cost of intervention exceeds that of the damage. Recent advances in economic analysis suggest that under many conditions, even extremely high densities of grasshoppers may not justify traditional management strategies in the U.S. (Davis et al. 1992). It appears that in the U.S. many grasshopper management programs have been conducted at a significant loss in terms of both economic and ecological perspectives (Davis et al. 1992).

To judge the economic impact of grasshoppers on rangelands, an estimate of forage consumption is needed. The monetary value of forage lost in a given area can then be compared to the costs of controlling the insects to provide a cost/benefit ratio. The loss of the forage and current value of the federal rangeland should be compared with the cost of treatment.

Monitoring

APHIS should complete frequent and intense monitoring to identify populations that can be controlled when they are small with ground based pesticide application equipment. Also APHIS should monitor sites before and after spraying to determine if there is an impact on water quality or non-target species.

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APHIS RESPONSES TO COMMENTS:

COMMENTERS EXPRESSED CONCERN ABOUT PESTICIDE CHOICE

APHIS agrees that carbaryl bait and diflubenzuron spray are the most environmentally benign options currently available to APHIS for grasshopper suppression in Idaho. We also agree that malathion is more likely to cause non-target effects than carbaryl bait or diflubenzuron. APHIS would select diflubenzuron or carbaryl bait whenever they would be expected to provide adequate suppression. Because APHIS would limit applications to no more than one-mile-wide bands of rangeland surrounding private agricultural land, the use of malathion might be necessary to exert rapid suppression of grasshoppers.

We maintain that the protective measures specified in the EA will minimize unintended impacts and prevent significant impacts. APHIS will abide by all requirements under Federal Insecticide Fungicide and Rodenticide Act (FIFRA), and APHIS will utilize buffers as specified in the EA. On February 1, 2005 The Environmental Protection Agency (EPA) published a proposed rule to codify their guidance regarding the interplay of the Clean Water Act (CWA) with FIFRA. Under this guidance and rule, application of pesticides over or near water would not be a violation of CWA as long as the application is in accordance with FIFRA. The EPA requirement for diflubenzuron aerial spray under FIFRA is to provide a 150 foot treatment buffer around water. APHIS proposes a buffer which exceeds the requirement under FIFRA by a factor of 3.3. The EPA requirements for carbaryl bait and malathion are to not apply directly to water. APHIS provides a 500 foot aerial buffer and a 50 foot ground buffer to insure that no direct application occurs.

COMMENTERS EXPRESSED CONCERN ABOUT PROTECTING AQUATIC SYSTEMS

APHIS employs treatment buffers around water to reduce the risk of significant impacts to aquatic systems.

COMMENTERS EXPRESSED CONCERN ABOUT WATERS OF THE UNITED STATES

On February 1, 2005 The Environmental Protection Agency (EPA) published a proposed rule to codify their guidance regarding the interplay of the Clean Water Act (CWA) with FIFRA. Under this guidance and rule, application of pesticides over or near water would not be a violation of CWA as long as the application is in accordance with FIFRA.

COMMENTERS EXPRESSED CONCERN ABOUT BUFFER WIDTHS

On page 16 of the EA, APHIS commits to a 500 foot buffer for aerial treatments. This includes aerial applications of bait. Buffers are proposed to insure that the amount of drift which may reach water or other sensitive sites is not great enough to cause significant impacts. APHIS is confident that the proposed action is consistent with CWA requirements as expressed in EPA Guidance.

COMMENTERS EXPRESSED CONCERN ABOUT BEES

APHIS communicates with registered honey bee keepers to explain the nature of the suppression program and offer them opportunities for protective actions. APHIS scouts record and report the locations of honey bee yards near treatment areas so avoidance methods can be considered. APHIS avoids areas where managed leafcutter bees are being used. Utilization of diflubenzuron or carbaryl bait whenever possible reduces the risk to wild and managed bees. The RAATs approach reduces risk to managed and unmanaged bees and other sensitive species even when malathion is used.

COMMENTERS EXPRESSED CONCERN ABOUT THE NO ACTION ALTERNATIVE

APHIS is not aware of medical diagnoses of entomophobia for any persons around the areas under consideration. However, APHIS personnel have had many face to face and telephone encounters with individuals who have expressed great concern over grasshopper outbreaks.

APHIS does admit we were not aware of the usage of "entomophilia" which is currently prevalent on the internet. We did not intend to address the use of insects in human sexual practices. We did intend to consider the positions expounded by individuals who have responded to our scoping process with statements like, "...Insects are wildlife – as fascinating and splendid as a bull elk or a sage grouse...". Additionally, Wendell Wood wrote in the April-June 2003 Issue of Oregon Conifer, Journal of the Oregon Chapter of the Sierra club, "... This Summer, a lesser known but equally amazing wildlife spectacle awaits visitors to the Klamath Marsh NWR, the Klamath Marsh's clear-winged grasshopper (*Camnula pellucida*). Not seen on the Klamath Marsh in "biblical" proportions since the early 1990s, insect and other wildlife enthusiasts may thrill again to the sight of clouds of grasshoppers as you stroll through the refuge grassland meadows. ... Please contact the refuge and ask that this wildlife spectacle not be diminished..."

The sagebrush steppe in Idaho is in an accelerated state of ecological change due to factors mentioned in the EA. Any removal of native vegetation may allow invasion by non-native plant species.

As an example of a risk to rare plant species, *Melanoplus bivittatus*, *Melanoplus sanguinipes*, and *Oedaleonotus enigma* (all commonly occurring species in southern Idaho) feed on pepperweed. Slickspot peppergrass is currently proposed for Threatened status and is presently believed to exist in 45 to 60 sites in southern Idaho. APHIS provides provisions in the EA so that land managers can request treatment inside the three mile buffer for this species if circumstances require its protection from grasshopper herbivory.

COMMENTERS EXPRESSED CONCERN ABOUT MONITORING

APHIS abides by the Grasshopper/Mormon Cricket Environmental Monitoring Plan.

COMMENTERS EXPRESSED CONCERN ABOUT COST BENEFIT ANALYSIS

The economics of grasshopper suppression are difficult to calculate, may require assumptions that cover multiple years, are quite site specific and are beyond the purview of APHIS.